

# Striving for Great Streets in Greater Vancouver

## 98 B-Line Project (Rapid Bus)

### No. 3 Road Streetscape – City of Richmond



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City of Richmond  
Planner / Landscape Architect



# 98 B-Line Project (Rapid Bus)

## Striving for Great Streets in Greater Vancouver

### Summary of Presentation

1. Planning / Transportation Context
2. 98 B-Line System Parameters
3. Theoretical Discussion:  
Principles for Creating Great Streets
  - Requirements
  - Qualities that Contribute
4. Practical Application:  
Evaluation of Recent Streetscape improvements on No. 3 Road in Richmond, British Columbia, Canada



Greater Vancouver

# Greater Regional Context

## Cascadia Cross-Border Basin

### Cascadia Basin Overview

- Greater Vancouver is part of the Cascadia Basin including the Fraser River Delta and the Puget Sound region.
- In 1960, the cross border region was home to 2.6 million people.
- By 1996, the population had risen to over 6 million.
- By 2020, there may be an additional 3 to 5 million people living and working in this area.



# Greater Vancouver Regional District (GVRD)

## Regional Planning Context

### GVRD Overview

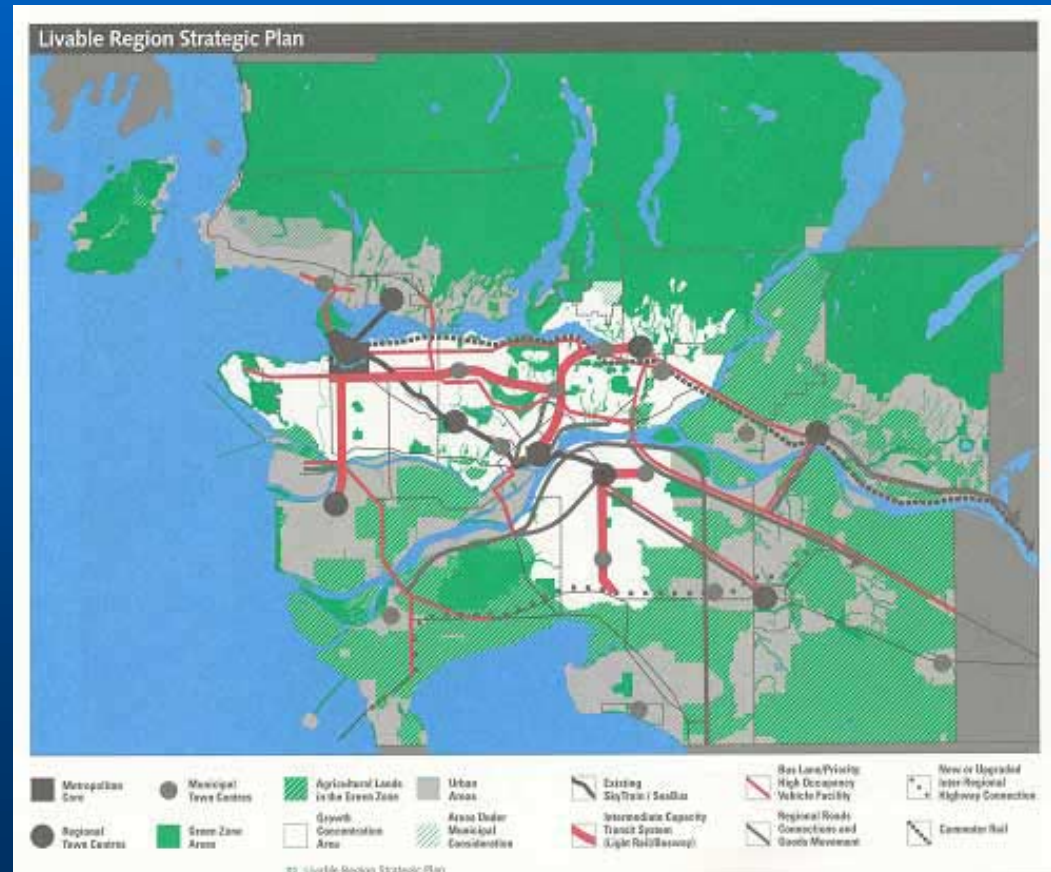
- 1991 population was  $\pm 1.6$  million
- 2001 estimated is  $\pm 1.9$  million
- The current growth rate is 18.75% over 10 years or 1.87% per year
- There are  $\pm 1.14$  million vehicles in the GVRD.
- It is estimated that there will be 100,000 more vehicles by 2005.
- Vancouver is consistently rated as one of the best places to live in the world but recently lost this status due traffic congestion.



Greater Vancouver Regional District (GVRD)

# Greater Vancouver Regional District (GVRD) Regional Planning Context

- Some of the regional planning challenges include balancing:
  - Growth & Congestion
  - Densification & Livability
  - Pollution & Environmental Impacts
- Over the last decade, population growth has been directed to Regional Town Centres
- Regional Town Centres are serviced by mass rapid transit
- Recent data suggest that directing population growth with rapid transit has been only partially successful
- Current thinking suggests that rapid transit investments should be made to service existing high corridors demand



Livable Region Strategic Plan (LRSP)

# Greater Vancouver Transportation Authority (TransLink) Regional Transportation Context

## TransLink - Overview

- Prior to 1998 - BC Transit Authority
- In 1998 the British Columbia (BC) provincial government established the BC Greater Vancouver Regional Transit Authority (GVTA) Act.
- Post 1998 – GVTA or TransLink (separate from both provincial & regional governments)
- TransLink Mandate: To plan and finance a regional transportation system that moves people and goods efficiently and supports the regional growth strategy, air quality objectives and economic development of the Greater Vancouver Regional District (GVRD).



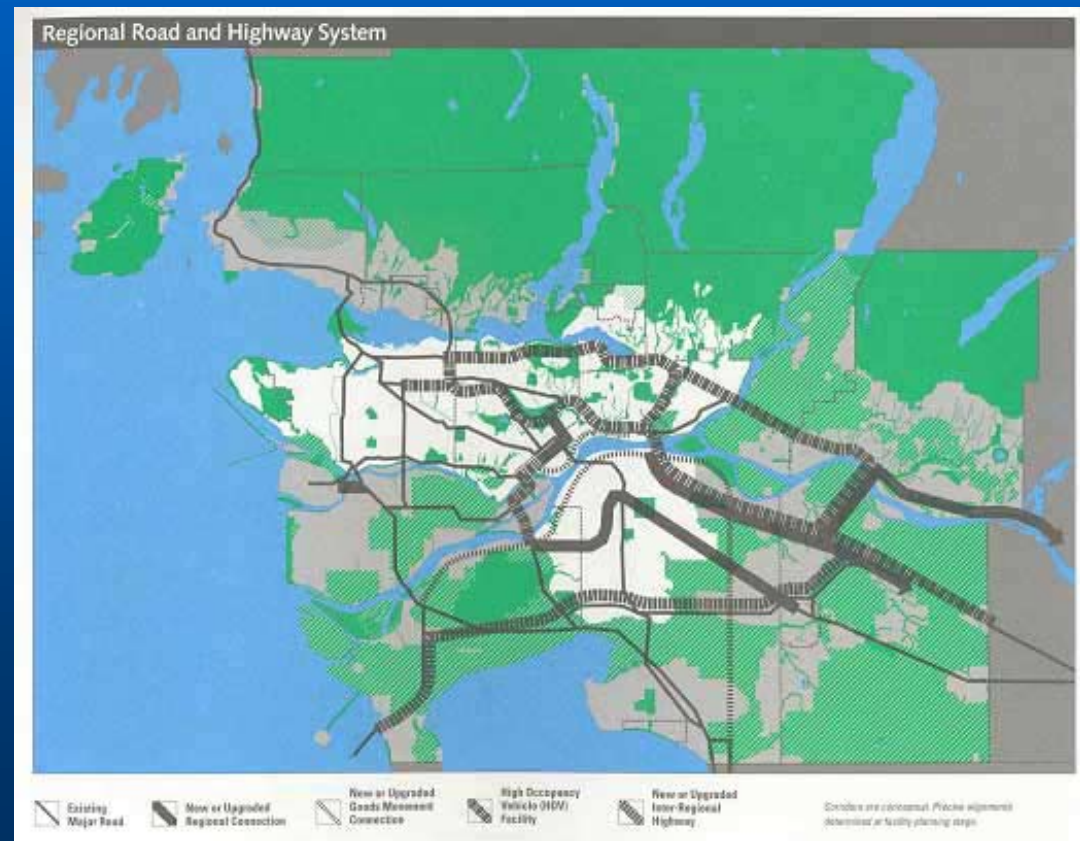
Contact the Greater Vancouver Regional Transit Authority or TransLink at:

[www.translink.bc.ca](http://www.translink.bc.ca)

# Greater Vancouver Transportation Authority (TransLink) Regional Transportation Context

## Major Road Network

- TransLink helps fund the maintenance, rehabilitation and improvement of the Major Road Network (MRN).
- MRN is 2,100 lane kilometres of roadways within the GVRD.
- Congestion is growing:
  - $\pm 5$  million daily trips are made in GVRD
  - $\pm 3.8$  million daily trips by private vehicles
  - $\pm 500,000$  more daily trips by 2005
- Rush hour traffic has increased by 8% or twice the region's population growth in 10 years
- Congestion has now caused transit speeds to slow by 7% in the past decade.



Regional Road & Highway System

# Greater Vancouver Transportation Authority (TransLink) Regional Transportation Context

## Regional Transit System

### West Coast Express

Serves the Fraser Valley via Burrard Inlet on the former CPR rail line

### SkyTrain (2 lines - Expo & Millennium)

Serves Vancouver Burnaby, New Westminster & Surrey

### SeaBus

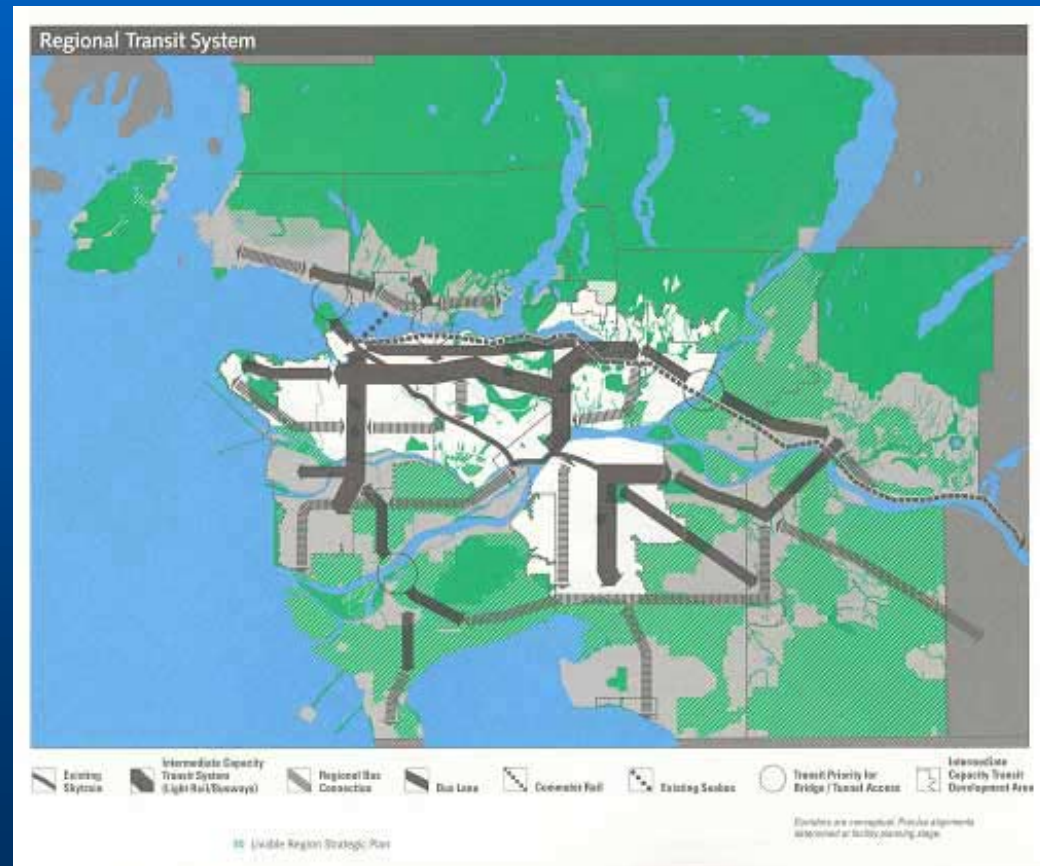
Serves the North Shore communities

### Rapid Bus

99 B-Line serves Vancouver & Burnaby (via Broadway & Lougheed) linking the Lougheed Mall & UBC

98 B-Line links downtown Vancouver to Richmond City Centre with a shuttle service to the Vancouver International Airport (YVR)

### Local Bus and HardyDart Network



## Regional Transit System

# Greater Vancouver Transportation Authority (TransLink) Regional Transportation Context

## Regional Transit System Components



SkyTrain



SeaBus



West Coast Express



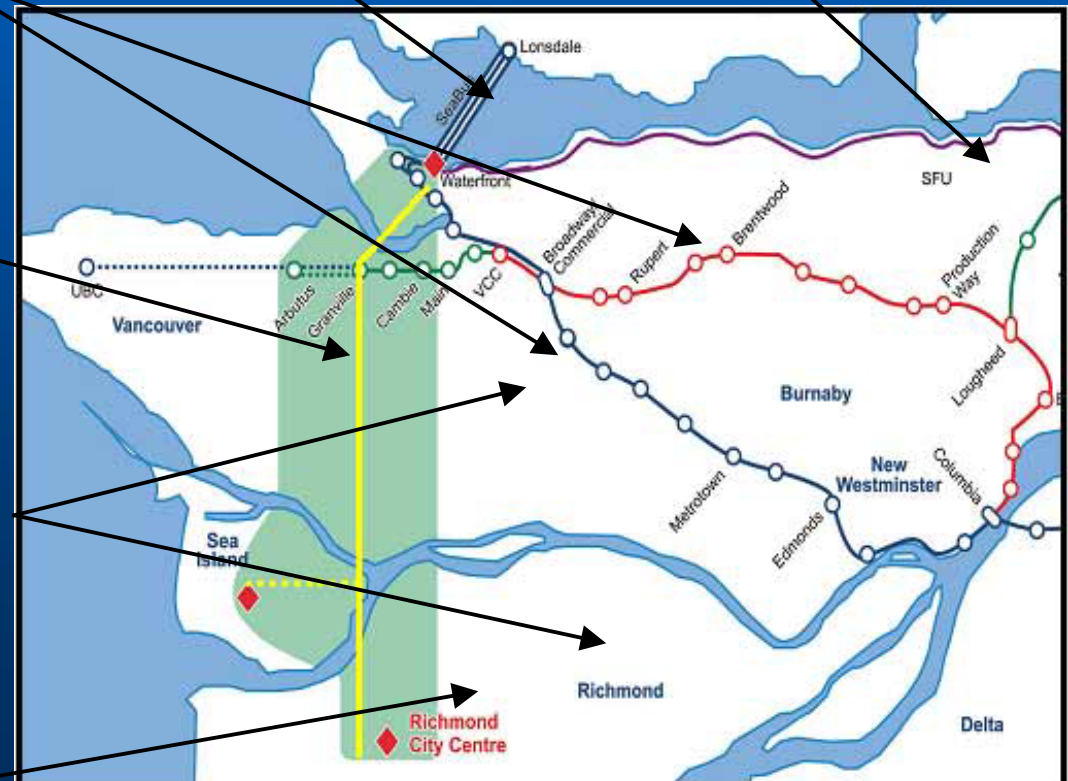
Rapid Bus



Local Bus Network



HandyDart



Rapid Transit Network Diagram

# TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements

### 98 B-Line General Description:

- A key component of the TransLink Strategic Transportation Plan.
- Designed to provide a bus based rapid transit system using advanced bus technology and portions of dedicated right-of-way.
- The 16-km (10 mile) route connects downtown Vancouver with Richmond Centre, the Vancouver with a connection shuttle to the Vancouver International Airport



# TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements

### 98 B-Line Overall Project Costs

The overall project encompassed a total investment of approximately ⌘\$90 million including:

- ⌘\$30 million for corridor improvements,
- ⌘\$30 million for a new bus maintenance & operations facility located in Richmond and;
- ⌘\$30 million for a new fleet of 28 dedicated buses.



# TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements

### Vehicle Description:

The buses are low floor, smart and articulating.

- They will be equipped with automatic vehicle location (AVL) technology with passive signal pre-emption capability.
- The coaches feature a distinctive 'B-Line' livery and seat 54 passengers with standing capacity for another 46.
- The vehicles have two wheelchair spots per bus as well as exterior bike racks.

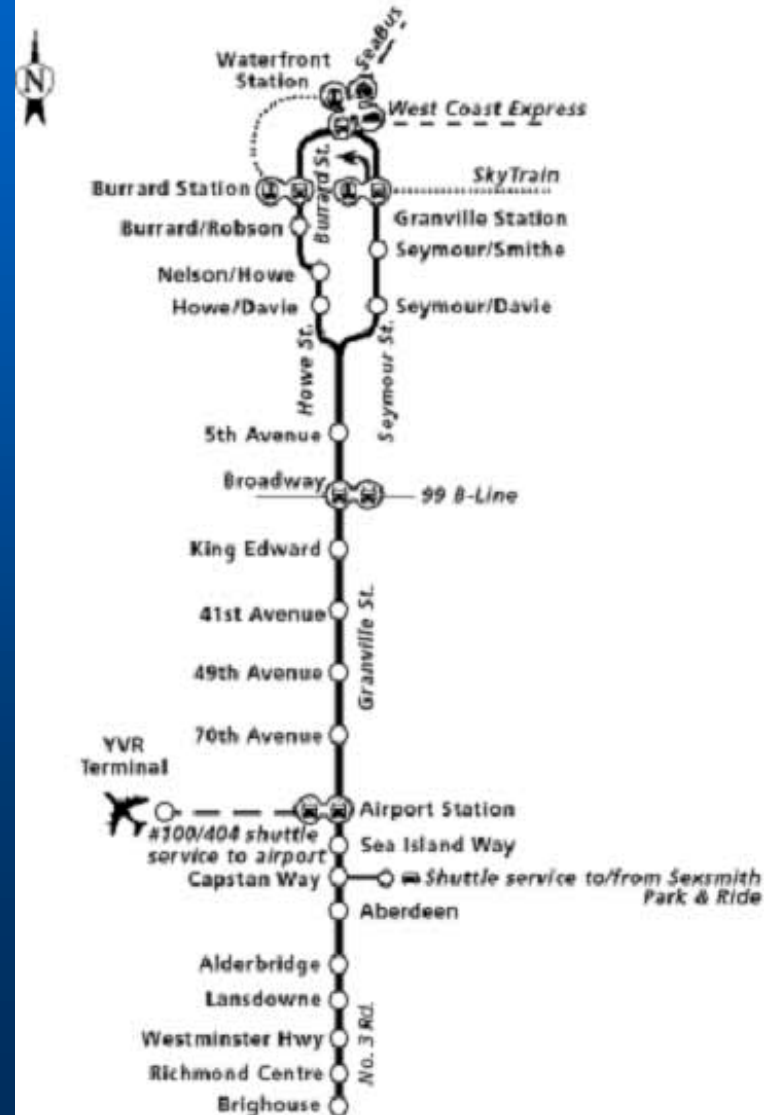


# TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements

98 B-Line Route Map – 16 kilometres (10 miles)

Richmond's  $\pm 3$  km busway is the first in Canada



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

### Digital Simulations:

- Innovative digital visualization tools were used
- Digital simulations were developed as part of the design process to compare and evaluate contemplated changes



No. 3 Road at Alderbridge Way - Before construction



No. 3 Road at Alderbridge Way - Early Proposal



No. 3 Road at Alderbridge Way - Final Proposal

TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements

### 98 B-Line Roadway Design



No. 3 Road at Capstan Way looking south – Before 98-B Line Construction

TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements



No. 3 Road at Capstan Way looking south – Preliminary Concept

TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements



No. 3 Road at Capstan Way looking south – Final Concept

TransLink / City of Richmond

# 98 B-Line / No. 3 Road Streetscape Improvements

## Alderbridge Way Bus Platform



TransLink / City of Richmond

## 98 B-Line / No. 3 Road Streetscape Improvements

### 98 B-Line System Service Levels

Service Level Categories	Current Service Levels (after 6 months operation)
Peak Period Frequency (a.m. & p.m. week days)	4 to 6 minutes*
Non Peak Frequency (non peak daytime)	7 to 10 minutes*
Off Peak Frequency (evenings & weekends)	10 to 15 minutes*
One Way Travel Times (peak periods)	44 to 47 minutes**
Daily ridership	±16,000 passengers & growing monthly

\* The AVL technology will be installed and functional July 2002.

\*\* Certain general purpose traffic improvements such as left turn lanes should be complete in Vancouver by summer 2002.

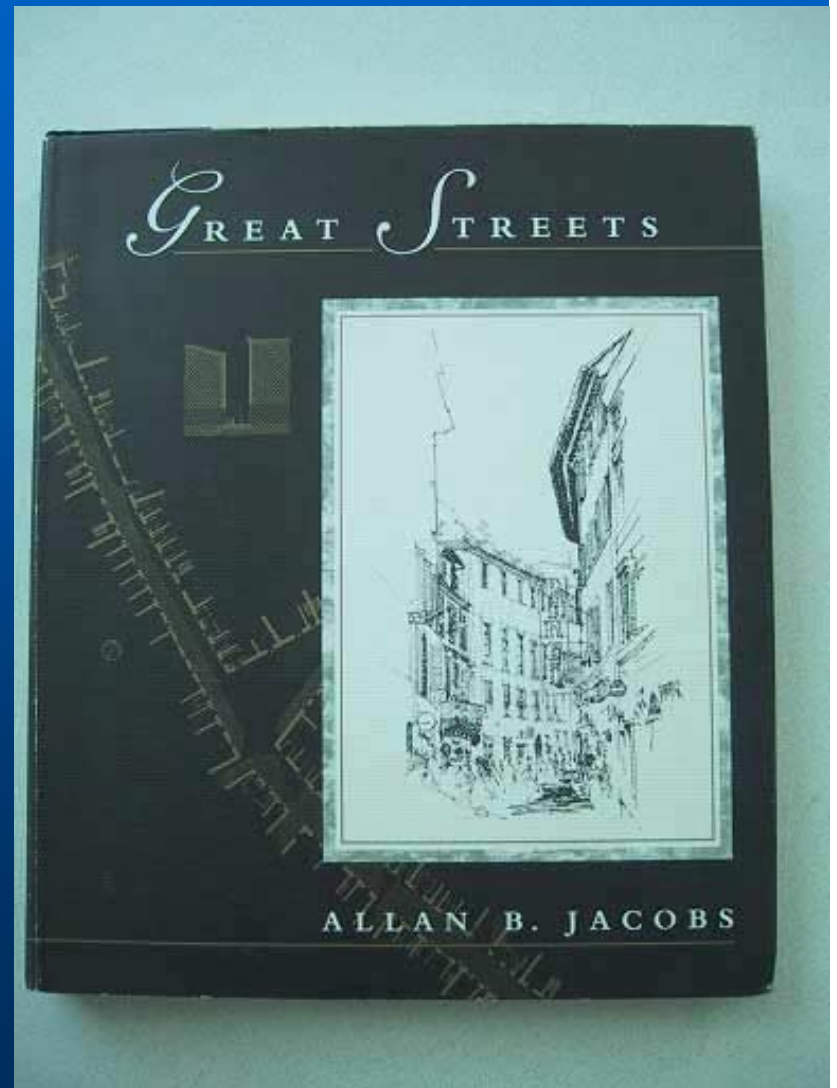
# Striving for Great Streets – Principles

## Major Urban Design Reference

Great Streets by Allan B. Jacobs  
Massachusetts Institute of Technology  
ISBN 0-262-10048-7  
Published in 1993

Allan B. Jacobs  
Professor and Chair  
Department of City & Regional Planning  
University of California, Berkeley

- This presentation will mainly focus on the best streets for people as pedestrians.  
Part 1 - Requirements for Great Streets  
Part 2 - Qualities that contribute to Great Streets



# Great Streets ... Requirements

## Part 1 - Requirements for Great Streets...

1. Places for people to walk;
2. Physical comfort;
3. Street edge definition;
4. Qualities that engage the eye;
5. Transparency;
6. Complementarity;
7. Maintenance;
8. Quality of construction & design;



# Great Streets ... Requirements

## 1. Places for people to walk

- Good streets provide:
  - access to abutting uses and
  - movement through the city by transit or car.
- Better streets make the journey comfortable and pleasant.
- Great streets invite leisurely, safe walking and create a memorable experience.
- Arithmetic for walking...
  - 15 persons/m/min. is crowded,
  - 10 persons/m/min. busy,
  - 5 persons/m.min. quiet,
  - 2 persons/m/min. empty.
- Create separation with curbs, boulevards, trees, parking, etc.
- No separation can be better on small crowded streets.

Robson St., Vancouver



Queen St. Mall, Brisbane



# Great Streets ... Requirements

Burrard St., & Davie St., Vancouver

## 2. Physical comfort

- Contextual comfort;
  - warmth or sunlight when it's cool,
  - shade & coolness when it's hot.
- Shelter from wind and rain
  - winds can be 25-40% less in cities\*
- Arcades are used in the most severe conditions to provide pedestrian comfort.
- Buildings can be tested for their wind producing qualities before they are built.
- People understand & respond to comfort.
- In Greater Vancouver with the wind and rain there should be more weather-protection for pedestrians.



Queen St., Auckland



# Great Streets ... Requirements

## 3. Street edge definition

- Great streets have definition both vertically and horizontally.
- Definition is created by the height of buildings, walls or trees and the spacing between these elements.
- The wider a street gets the more mass or height is required to define it.
- Beyond the width of ±137m or (450 ft) streets are hard to define.
- Guidelines for Street Definition (height to width ratio):
  - Definition is achieved at a ratio of 2 to 1 (perpendicular to building line);
  - Alternatively at a ratio of 4 to 1 (at 30° from building line)
- For wide streets where width is greater than height, intervening trees strengthen or provide definition.



Stanley  
Park  
Vancouver



Hornby St., Vancouver

# Great Streets ... Requirements

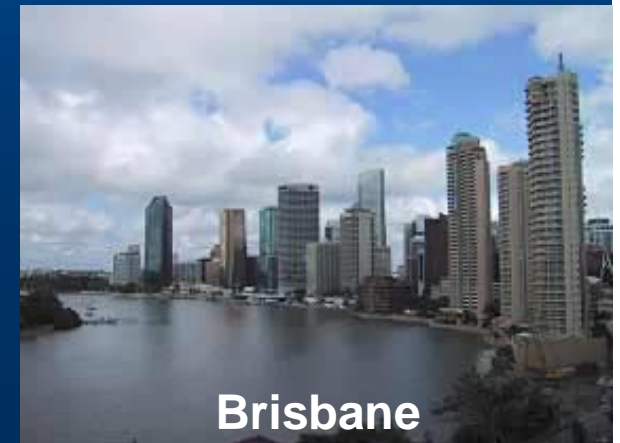
## 4. Qualities that engage the eye

- In the activities of everyday life the centre of vision will shift as often a 100 times a minute.
- While driving a car the rate of visual fixation exceeds 100 times a minute.
- Visual complexity not chaos is required, chaos is disorienting.
- What makes streets special is their movement (light, branches, separate buildings, many windows, signs and people).
- The level of detail and articulation in building design is important (i.e. neoclassical versus post-World War II buildings).

Vancouver Hotel



Vancouver



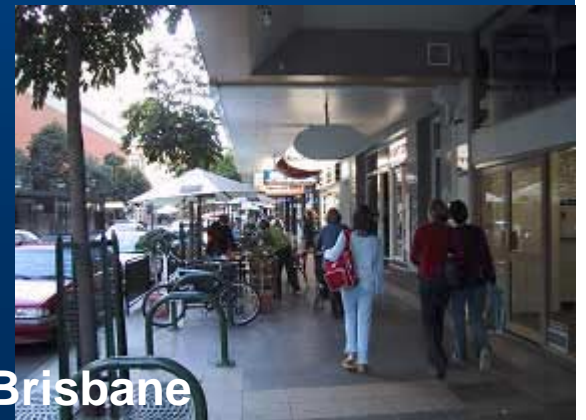
Brisbane

# Great Streets ... Requirements

## 5. Transparency

- The best streets have a quality of transparency about their edges between the public and private realms.
- Transparency implies an invitation to view or know what is behind the street wall.
- The more windows & doorways the better (as little as 12 ft apart).
- Windows with blinds, drapes and screens offer nothing to the street.
- Clear visibility is not always necessary particularly on residential streets but a sense of habitation, the potential for refuge and informal supervision add to the transparency and comfort of a street.

Robson St., Vancouver



Albert St., Brisbane

# Great Streets ... Requirements

## 6. Complementarity

- Buildings on the best streets get along with each other.
- There are rarely big jumps in height along the street wall.
- Landmarks are exceptions but add to way-finding.
- It is not design style but buildings with regard and respect for one another.
- The variables are building scale, materials and colour, cornice lines and belt courses, window fenestration, entries, bay windows and porches, overhangs, shadow lines and details.
- Not generally characterized by individual architectural wonders.

Howe St.,  
Vancouver



Georgia St.,  
Vancouver



# Great Streets ... Requirements

## 7. Maintenance

- We prefer clean, smooth surfaces with adequate traction.
- Shopkeepers know about maintenance.
- Some building materials such as reflective glass depend on maintenance.
- Maintenance is complemented by the use of good quality materials that are relatively easy to maintain.
- Special paving materials require on-going maintenance & periodic replacement... all too frequently with other materials especially asphalt.
- It may be better not to build special features if they cannot be maintained.

10<sup>th</sup> Ave., & Robson St., Vancouver



Robson St., & North Gate, UBC, Van.

# Great Streets ... Requirements

## 8. Quality of construction and design

- Quality is determined by materials and workmanship.
- Design and quality control through construction are also important.
- There is no such thing as poor quality materials only problems with how materials are used.
- Imitation materials almost always show.
- High quality is often associated with money and by implication only communities that can afford them have great streets but this reasoning is faulty.
- It is appropriate materials and care that are at issue in making great streets and certainly within the public realm those should be the standard.

Main Mall  
University of  
British Columbia



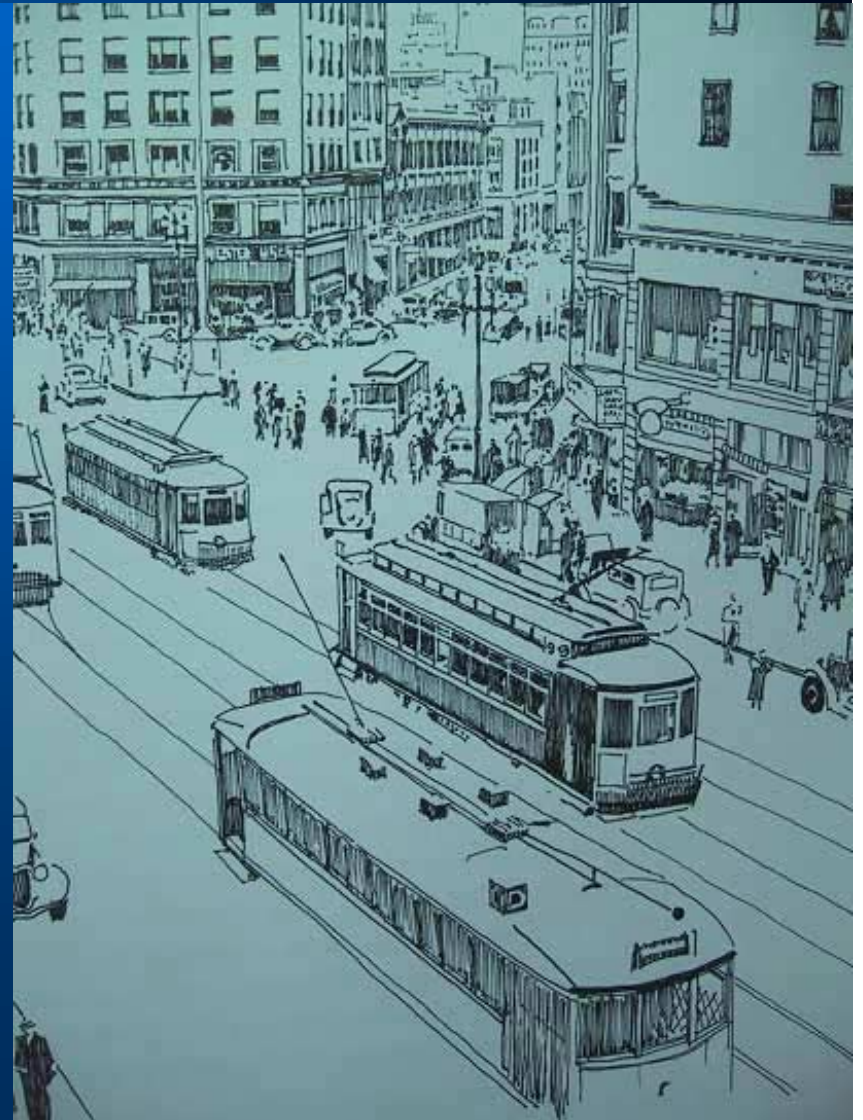
Granville Island Market, Vancouver



# Great Streets...Qualities that contribute

## Part 2 - Qualities that contribute to Great Streets...

1. Trees
2. Beginnings and Endings
3. Many Buildings rather than Few
4. Special Design Features
5. Places
6. Accessibility
7. Density
8. Diversity
9. Length
10. Slope
11. Parking
12. Contrast
13. Time



# City of Richmond Planning and Transportation Context

## No. 3 Road Streetscape Improvements

### City of Richmond

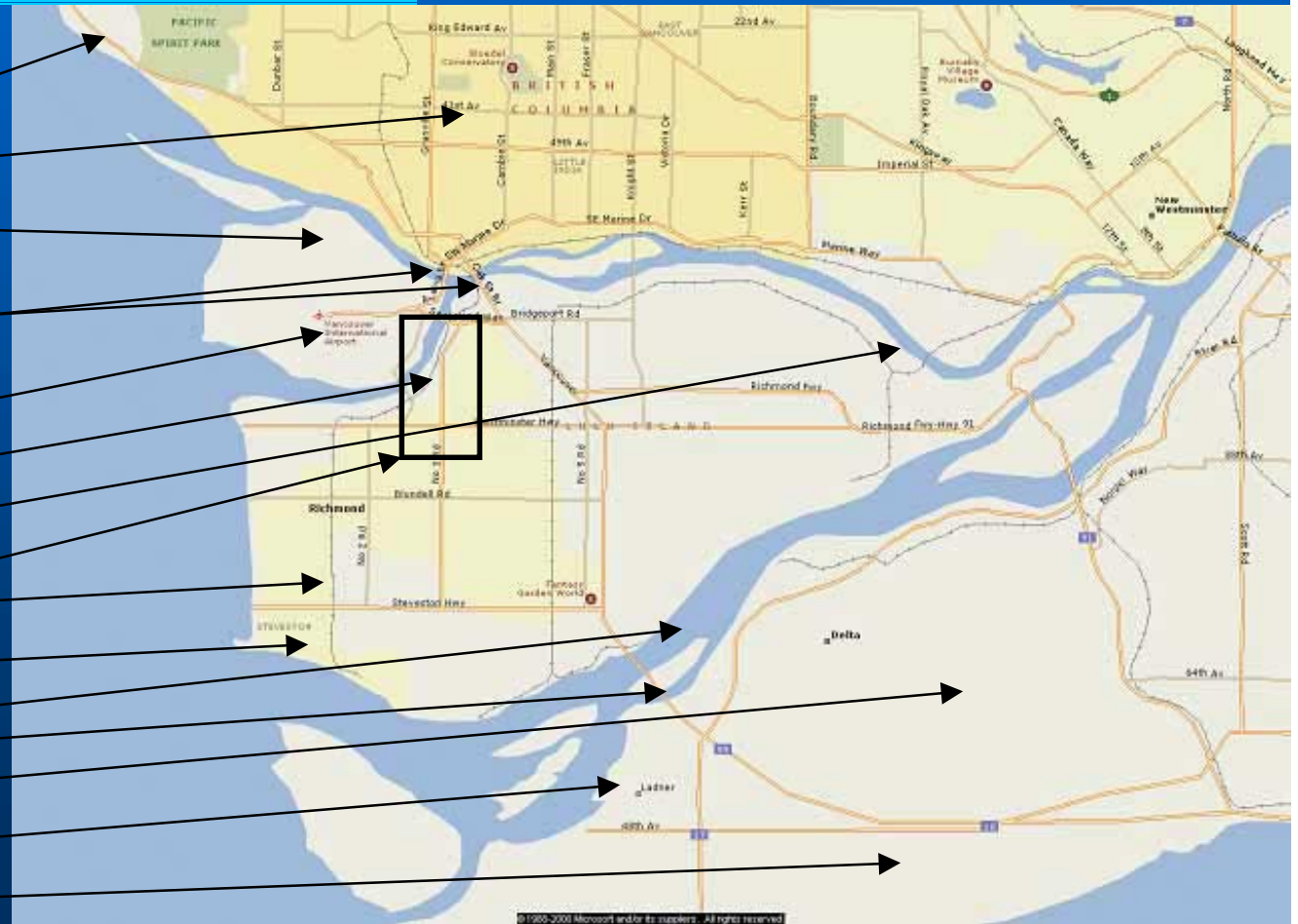
- Richmond is the fourth largest city in the GVRD (Vancouver, Surrey & Burnaby)
- The population of Richmond has grown by 35,521 or 28% between 1991 and 2001 from 128,824 in 1996 to 164,345 in 2001
- The Vancouver International Airport (YVR) is located in Richmond.
  - Canada's second largest Airport
  - ±15 million passengers per year
  - ±20,000 employees
- Richmond has the second highest concentration of hotel rooms in the GVRD and is the centre for much of the region's 'high-tech' industry.



# City of Richmond Planning and Transportation Context

## No. 3 Road Streetscape Improvements

- University of BC
- Vancouver
- Sea Island
- Bridges to Vancouver  
(Arthur Lang, Oak St.,  
Knight St. Alex Fraser)
- Van. Int'l. Airport
- No. 3 Road (main street)**
- North Arm of Fraser
- Richmond Town Centre
- Lulu Island
- Steveston Neighbourhood
- Fraser River (Main Arm)
- Deas Tunnel
- Burns Bog
- Ladner
- Delta



# Richmond Town Centre & No. 3 Road

- Vancouver CBD
- Van. Int'l. Airport
- North Arm of Fraser
- No. 3 Road
- Richmond Town Centre
- Minoru Park
- Richmond City Hall Complex



# GVRD/Vancouver/Richmond Comparisons

Category	GVRD	Vancouver	Richmond
Population (1991)	1.6 million	485,000	128,000
Population (2001)	1.9 million	560,000	165,000
Annual Average Growth Rate	1.88%	1.55%	2.89%
Total Area	2,820 km <sup>2</sup>	113 km <sup>2</sup>	124 km <sup>2</sup>
Length of Roads	±2,100 lane kms*	±1,400 kms	±800 kms

\* Major road network only

# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**No. 3 Road has recently been reconstructed to include:**

1. More places for people to walk;  
(with sidewalks on both sides)
2. Improved physical comfort;  
(with accessible walkways and boulevard separation)



1. No. 3 Road boulevard



2. Dedicated bus lanes

# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**No. 3 Road has recently been reconstructed to include:**

- 3. Better street edge definition;  
(with street tree planting)
- 4. Enhanced qualities to engage the eye;  
(with decorative streetlights and banners)



3.



4.

No. 3 Road typical intersection

# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**No. 3 Road has recently been reconstructed to include:**

5. Transparency has been improved;  
(with recently approved commercial projects that address the street)
6. Complementary streetscape elements;  
(with a kit of parts approach to street furnishings and appointments)

Buildings  
begin to  
define the  
street

5.



6.



Street furnishings

# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**No. 3 Road has recently been reconstructed to include:**

7. Regular maintenance;  
(with feature annual plantings)
8. High quality design and construction;  
(with stockpiles of special feature replacement elements such as plinths).



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Additional qualities that contribute to the street improvement include...**

1. Trees  
(over 500 new street trees along 3 kms)
2. Beginnings and Endings  
(completion of Richmond's new City Hall)

1.



2.



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Additional qualities that contribute to the street improvement include...**

3. Many Buildings rather than Few  
(redevelopment interest along the street)
4. Special Design Features  
(implementation of a public art program)



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Additional qualities that contribute to the street improvement include...**

5. New places for people to walk (plazas at strategic locations)
6. Improved pedestrian accessibility (along & across the street)



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Additional qualities that contribute to the street improvement include...**

**7. Increased Density**  
(40 new point towers in 10 years)

**8. Increased Diversity**  
(encourage mixed land use)



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Additional qualities that contribute to the street improvement include...**

**9. Weather protection & pedestrian comfort  
(protected walkways punctuated with plazas)**



**10. Slope  
(retain mountain views to north)**



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Additional qualities that contribute to the street improvement include...**

**11. Parking**  
(elimination of curbside parking)

**12. Contrast**  
(City Hall establishes a new standard of urban design for the City and No. 3 Road)

11.



12.



# City of Richmond / TransLink - 98 B-Line (Rapid Bus)

## No. 3 Road Streetscape Improvements

**Much has been accomplished along No. 3 Road but many challenges remain:**

- Phase 2 improvements include more decorative streetlights and further under grounding of utilities;
- Continuation of barrier free pedestrian access;
- More mixed land use along the street;
- Encouraging the pace of private frontage redevelopment;
- Incremental boulevard recovery with redevelopment, and;
- Planning for mass rapid transit.
- No. 3 Road will continue to evolve over time.

**For further information contact the City of Richmond at:**

**[www.richmond.bc.ca](http://www.richmond.bc.ca)**

**or**

**[bguzzi@city.richmond.bc.ca](mailto:bguzzi@city.richmond.bc.ca)**

